CLAIMS

I claim:

1. A method of practicing precision farming wherein at least one agricultural operation is to be conducted with respect to a predetermined agricultural field, comprising the steps of:

providing an air breathing, self-powered miniature aircraft having image acquisition apparatus carried thereaboard;

surveying the agricultural field by acquiring at least one image of then agricultural field from the image acquisition apparatus carried aboard the miniature aircraft;

analyzing the at least one image obtained in said step of surveying the agricultural field to determine at least one local condition of the agricultural field and at least one requirement of the agricultural field relative to an agricultural operation; and

conducting the agricultural operation with respect to the agricultural field in a manner corresponding to the at least one requirement of the agricultural field as determined in said step of analyzing the at least one image.

2. The method according to claim 1, wherein said step of conducting an agricultural operation comprises the further step of applying at least one agricultural resource to the agricultural field according to at least one requirement determined in said step of analyzing the at least one image.

3. The method according to claim 1, wherein said step of surveying the agricultural field comprises the further step of causing the aircraft to gain altitude under its own power.

4. The method according to claim 3, wherein said step of surveying the agricultural field comprises the further step of launching the aircraft from the ground.

5. The method according to claim 1, comprising the further step of launching the aircraft entirely under its own power.

6. The method according to claim 1, wherein said step of surveying the agricultural field comprises the further step of controlling the flight path such that the entire agricultural field being surveyed is overflown in a single flight.

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7. The method according to claim 6, wherein said step of controlling the flight path of the aircraft comprises the further step of causing the aircraft to fly in a sweeping pattern wherein flight of the aircraft is controlled to include at least a first turn in one direction when overflying the agricultural field and a second turn in an opposed direction when overflying the agricultural field.

8. The method according to claim 6, comprising the further step of providing automated flight control apparatus aboard the aircraft and a microprocessor having programming aboard the aircraft, wherein the microprocessor is disposed to control the automated flight control apparatus to achieve a predetermined flight path.

9. The method according to claim 8, comprising the further steps of

providing a radio frequency receiver disposed to communicate with a Global Positioning System, wherein the radio frequency receiver is disposed in communication with the microprocessor, and

utilizing location signals from the Global Positioning System to control at least partially the flight path of the aircraft.

10. The method according to claim 9, comprising the further step of providing a redundant navigation system complementing location determination provided by said step of utilizing location signals from the Global Positioning System.

11. The method according to claim 10, comprising the further steps of:

providing the miniature aircraft with a barometric altitude sensor, an airspeed sensor, and roll and pitch sensors;

operably connecting the barometric altitude sensor, the airspeed sensor, and the roll and pitch sensors to the microprocessor; and

determining location by utilizing data obtained from the barometric altitude sensor, the airspeed sensor, and the roll and pitch sensors.

12. The method according to claim 1, wherein said step of surveying the agricultural field comprises the further step of conducting plural complementing flights over the agricultural field being surveyed.

13. The method according to claim 12, wherein said further step of conducting plural complementing flights comprises the further step of utilizing at least one additional miniature aircraft.

14. The method according to claim 12, wherein said step of controlling the flight path of the aircraft comprises the further step of causing the aircraft to fly in a sweeping pattern wherein flight of the aircraft is controlled to include at least a first turn in one direction when overflying the agricultural field and a second turn in an opposed direction when overflying the agricultural field.

15. The method according to claim 12, comprising the further step of providing automated flight control apparatus aboard the aircraft and a microprocessor having programming aboard the aircraft, wherein the microprocessor is disposed to control the automated flight control apparatus to achieve a predetermined flight path.

16. The method according to claim 15, comprising the further steps of

providing a radio frequency receiver disposed to communicate with a Global Positioning System, wherein the radio frequency receiver is disposed in communication with the microprocessor, and

utilizing location signals from the Global Positioning System to control at least partially the flight path of the aircraft.

17. The method according to claim 16, comprising the further step of providing a redundant navigation system complementing location determination provided by said step of utilizing location signals from the Global Positioning System.

18. The method according to claim 17, comprising the further steps of:

providing the miniature aircraft with a barometric altitude sensor, an airspeed sensor, and roll and pitch sensors;

operably connecting the barometric altitude sensor, the airspeed sensor, and the roll and pitch sensors to the microprocessor; and

determining location by utilizing data obtained from the barometric altitude sensor, the airspeed sensor, and the roll and pitch sensors.

19. The method according to claim 1, comprising the further step of causing the aircraft to fly under control to a predetermined location after overflying the agricultural field being surveyed.

20. The method according to claim 1, comprising the further step of causing the aircraft to fly under control to a location outside of the agricultural field being surveyed.

21. The method according to claim 1, comprising the further step of causing the aircraft to fly under control to a location proximate its launch location.

22. The method according to claim 1, wherein said step of surveying the agricultural field comprises the further step of acquiring a plurality of multispectral images of the agricultural field from the aircraft.

23. The method according to claim 1, wherein said step of surveying the agricultural field comprises the further step of acquiring a plurality of hyperspectral images of the agricultural field from the aircraft.

24. The method according to claim 1, wherein said step of surveying the agricultural field comprises the further step of acquiring a plurality of ultraspectral images of the agricultural field from the aircraft.

25. The method according to claim 1, wherein said step of providing an air breathing, self-powered miniature aircraft having image acquisition apparatus carried thereaboard comprises the further step of providing thermal image acquisition apparatus thereaboard.

26. The method according to claim 1, wherein said step of providing an air breathing, self-powered miniature aircraft having image acquisition apparatus carried thereaboard comprises the further step of providing synthetic aperture radar image acquisition apparatus thereaboard.

27. The method according to claim 1, wherein said step of providing an air breathing, self-powered miniature aircraft having image acquisition apparatus carried thereaboard comprises the further step of providing laser radar image acquisition apparatus thereaboard.

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